tight cover. This is made possible by tacking a tongue of half-inch stripping around the edge of the cover to fit into a trough at the top of the walls. The tongue and trough are painted matt black, a little lampblack in weak alcoholic shellac answering for this purpose. The interior of the box need not be painted, although a white coat affords a better view of manipulations in the interior.

To view what is going on inside the box two small windows are provided at the level of the eye when the box is set on a table. The window in front is of clear ruby photo-safe glass, the one opposite is either of ruby glass or translucent ruby fabric. Behind the rear window is placed an electric bulb operated by a switch inside. Another inside switch controls a socket on one wall which may interchangeably have a low candle-power light for lantern slide making or a high power light for exposing development papers. A shelf located midway across the end is an added convenience. The entire cost for materials is five dollars; a few hours of labor can construct the box.

A secret of continued success in using this small darkroom is to keep hypo away and thus avoid contamination. This is possible by having a tray containing weak acetic acid, about 2 per cent., into which is to be immersed plates, slides, films or prints as fast as they are developed. The acid checks the action of the developer and permits the quick removal of the light-sensitive materials from the developing box to the hypo bath outside without danger of fogging. Developed material can be left in the acid bath until it is convenient to open the box.

The idea of a developing box is not new. There are small developing tanks and boxes on the market for daylight use by the time method of development. Convenient changing bags of cloth have long been employed by the traveler. Developing boxes equipped with sleeves and ruby glass are available with X-ray outfits. Undoubtedly the urgency of the war period for rapid photographic production led to the construction of portable darkrooms. But the simplicity, adaptability and convenience of the above-described miniature darkroom are so great that the writer will be pardoned, even though his discovery is not new, if this announcement will acquaint others with a worthwhile piece of equipment.

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THE VALUE OF COST ACCOUNTING IN ANALYTICAL AND CONSULTING LABORATORIES

THIS subject has had very little, if any, consideration in the past. The probable reason for this neglect appears to be the comparatively small field for analytical and consulting laboratories.

Through the long association with this field the writer has worked out an elaborate system of cost records which have proved most valuable in the determination of a fair price to clients as well as a fair return to the owners. This system produces such information as will show what work is profitable and what kinds of analytical tests are unprofitable; the reasons for the profits or losses are readily revealed after a persistent tabulation of the records.

The latter information serves to permit the preparation of sliding scale prices, *i. e.*, for one test, for two tests, for three tests, etc. It also reveals the comparative fluctuations in the costs on a given test. This variation in costs should always be treated with the utmost care, as when a worker becomes so proficient that he does not require the assistance of any of the usual factors in a laboratory, and finishes the job in record time, the owner as well as the client is entitled to a little of this efficiency in dollars and cents. The owner should weigh the costs in these cases against the reasons why that worker is proficient in making these certain tests and allow himself leeway for either the replacing of that man or the increasing of his salary. An efficient and speedy worker generally secures his knowledge by repetition principally, by use of the owners' books and the supervision and advice of his chiefs. In other words, the speed and efficiency of one worker is not the only basis for costs.

The costs when compiled in a comparative form will readily show the variations, the causes being numerous. Some of them are represented in the unfamiliarity with the

methods of analysis, the necessity of preparing the apparatus for the work, the difference in wages and the necessity for accuracy and not speed. The latter case appears when there is a legal matter involved and several repeat tests are made.

The costs are primarily based on the productive amount. Between the period when a worker starts his job and when he finishes it his time is estimated and placed on a card. Each day he completes a Daily Time Report, filling in the laboratory number, work done and the estimated time required. It is impossible to accurately determine the amount of time spent on the job, as from start to finish. The reason for this being the number of jobs a worker can do at one time, namely, start one and get that job in a condition where it will work while he is away from it, in the meantime, start another, watching both at the same time.

After the worker fills in his card it is approved by the man in charge and sent to the accounting department daily. The department chiefs and assistants are given cards which permit them to record their time from start to finish. The nature of their work, which consists mainly in consultation work, permits a recording of their time accurately.

The time cards of both the workers and chiefs are then summarized by the addition of the per hour rate, and the amounts chargeable to any particular job are entered on a cost-ledger card.

The productive amount as shown on the cost ledger card is increased by its proportionate share of the overhead as determined by the distribution of overhead. Materials used are so small in comparison with the other factors that to determine the amount used on each job would cost more than the results would warrant. The total amount of materials used, as determined by a check against the inventory on the yearly basis, is charged directly into the overhead.

In the beginning it is necessary to appraise the inventory as accurately as possible, also the location of the various items as to departments. The space occupied by each department must be known so as to properly distribute the rent charges. The question of insurance can be distributed according to its risk, *i. e.*, fire—on the basis of the inventory.

The value of this work is evidenced in more than one direction. It presents a basis for setting a figure for a fair price for analytical and consulting work, a check on the comparison of costs so as to quote on large amounts of tests (*viz.*, more than one at a time), keep a close watch on the speed and efficiency of the various workers, determine the value of unfinished work, have a complete record at all times of the costs of promotion of prospectives, a perpetual record of the costs on contracts, and the value of the various kinds of income and their cost.

The difference in keeping these costs in a laboratory is apparent within two to three months after the installation. The operation of these records does not require any large force to keep it running and the time in preparing the cards by the employes does not in any way interfere with their regular work.

FRED W. FEUERBACHER

QUOTATIONS

PROTECTING SCIENTIFIC RESEARCH AT THE POLLS

AT the polls in November, in California, Colorado and Washington, scientific medicine will be tried at the bar of public opinion. The verdict will depend in part on public knowledge of the attainments and conduct of physicians in the past. The true physician, as attorney for the defense, will be actively campaigning against the antis of all kinds, and he will be especially active on election day, when the case goes to the jury.

In Colorado and in California, the people will decide by popular vote whether medical research involving the use of living animals shall be prevented. The antivivisectionists in these states, mistrusting or despising their legislatures, are seeking, through the initiative, to bring about the enactment of such measures by playing on the ignorance and the emotions of the people. No properly informed person can vote in favor of the antivivisectionist measures proposed.

In Washington, the contest is being fought